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EXPLOITATION REPORT

ON FRAGMENT, METAL, RECOVERED IN THE REPUBLIC OF THE CONGO, ORIGIN BELIEVED TO BE AN UNIDENTIFIED FLYING OBJECT (COUNTRY UNIDENTIFIED) (U)

MCN-25500

SECTION I. (C) Purpose (U)

1. (C) The purpose of this report is to present the results of the exploitation of a metallic fragment recovered near the town of Kerekere in the Republic of the Congo. Fragment recovery was the result of a ground-level search which was conducted after an unidentified flying object exploded and fell to earth in the area. The sighting and recovery took place sometime between 10 and 15 October 1965. Other than a reported east-to-west direction of flight for the UFO, specific observation and recovery details are lacking.

SECTION II. (C) Description (U)

2. (C) Details concerning the exact location and characteristics of impact are unknown. However, the appearance of the fragment indicated exposure to high temperatures prior to impact (earth). Terminal impact of the specimen had little or no effect on its final condition or appearance. The fragment weighed [illegible], had an indefinite density of approximately iron and measured 2.25 x 1.75 x 1.0 inches. The top and side views of the specimen were rounded and appeared to have been shaped by heating and melting. This is illustrated in Figures 1 and 2. The "U" shaped groove, visible in Figure 1, is the outline of an insert of which that differs materially from the rest of the specimen. Figure 3 shows the side opposite the end shown in Figure 2.

GROUP 3 [illegible] YEAR [illegible] NOT AUTOMATICALLY DECLASSIFIED

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and was composed of six machined or formed "T" shaped fins extending along the major axis of the fragment.

SECTION III. (C) Conclusions

3. (C) The fragment was originally part of an electrical component and could be identified as a motor armature, generator armature, or associated electrical regulating or control device.

4. (C) The fragment was constructed of .010-inch thick silicon steel laminate stacked on a central mild steel core or shaft.

5. (C) Materials, processes, dimensions, etc., as such, prevent determination of exact origin (country).

6. (C) Surface appearance and microstructure of the specimen indicates exposure to temperatures in excess of 2500° F.

SECTION IV. (C) Exploitation Data (U)

7. (C) The recovered specimen weighed [illegible] 41 grams and had a density closely approximating [illegible] metal or heavy oxide was [illegible] temperatures in excess of 2500° F. While there are no indications of impact, the flowed metal, as shown in Figures 4 and 7, would substantiate the conclusion that the item was moving at a high velocity when it was hot.

8. (C) Fabrication of the item was accomplished utilizing more or less standard procedures for fabricating electric motor armatures. Armature laminates were stamped (punched) from approximately .012-inch sheet steel, copperplated, and assembled on a mild steel shaft approximately .625 inches in diameter. Following assembly, the laminates were joined by solid-state or diffusion-bonding of the copper-

placing. This can be accomplished by tightly compacting the laminate assembly and heating in a furnace. Temperature required for bonding of the copper depends upon the degree compaction or pressure; the higher pressures requiring proportionately lower temperatures.

9. (C) A cross-section (transverse to [illegible] length of the specimen) is shown in Figure 5. The light-colored, [illegible] lines are the edges of individual laminates, caused by cutting a[t] [r]ight angle to, instead of parallel to, the laminates. [illegible] fins or petals are "T" shaped. This shape is used to help [hold] winding wire in place and is found on high RPM motors. The melted condition of some of the "T's" is indicative of the high heating conditions experienced. The outer surface of the armature shaft is serrated to prevent axial slippage of the laminates.

10. (C) The lamination or stacking of [the] individual laminates is clearly illustrated in Figure 6. The sp[ace] between laminates on the fin at the top of the photograph is due to the melting and [illegible] of the copperplating during the high temper[ature exposure] of the specimen. Some of the copper [has] been [illegible] the fin at the bottom of the photograph. A [illegible] cross section of this area is shown in Figures 7 and 8.

11. (C) Another result of intense heating was the enlarged grain size of the steel laminates' microstructure. The microstructure of the laminates shown in Figures 9 and 10 illustrates grain sizes that are comparable to [illegible] 2 of ASTM [illegible]. [illegible] large grain size [illegible] [illegible]

intense heat and then cooled at a comparatively slow rate.

12. (C) The light material between the laminations in Figure 9 is plated copper that melted and flowed between the laminations when the entire specimen was hot. A photomicrograph of this is shown in Figure 11.

13. (C) Analysis of the [illegible] disclosed the following:

Element	Percent Present (Weight)
Carbon	[illegible]
Manganese	[illegible]
Silicon	[illegible]
Nickel	less than 0.10
Chromium	0.37
Molybdenum	less than 0.01

14. (C) Chemical composition of the steel laminations was as follows:

Element	Percent Present (Weight)
Manganese	[illegible] .25
Silicon	([illegible] .5)
Nickel	[illegible] 0.[illegible]
Chromium	[illegible]
Molybdenum	less than 0.01

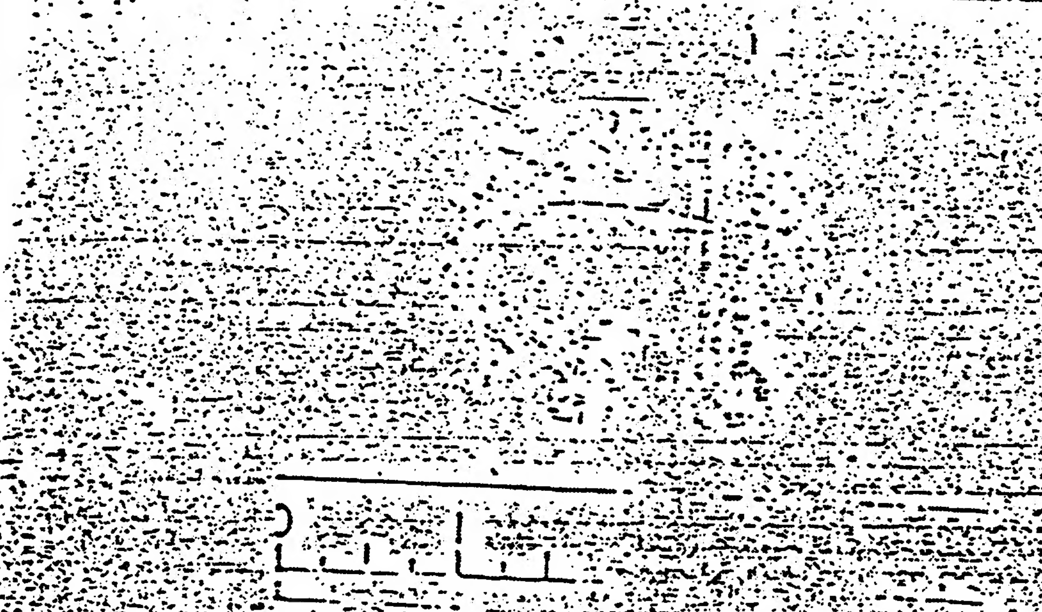


Figure 1 (U) Top View ([illegible] 265 [illegible])

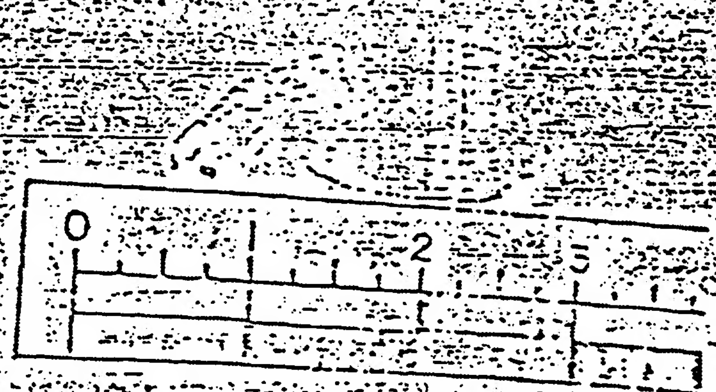


Figure 2 (U) Side View of [illegible]

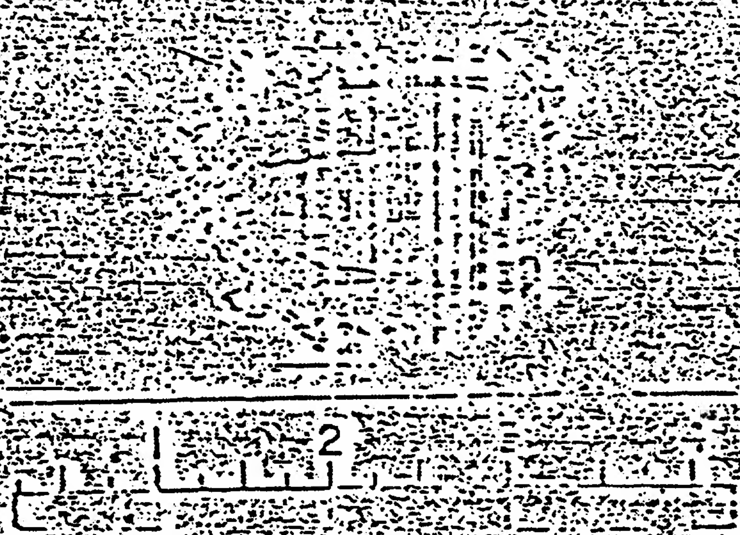


Figure 3.(U)Opposite View of Fig. #1 (U)

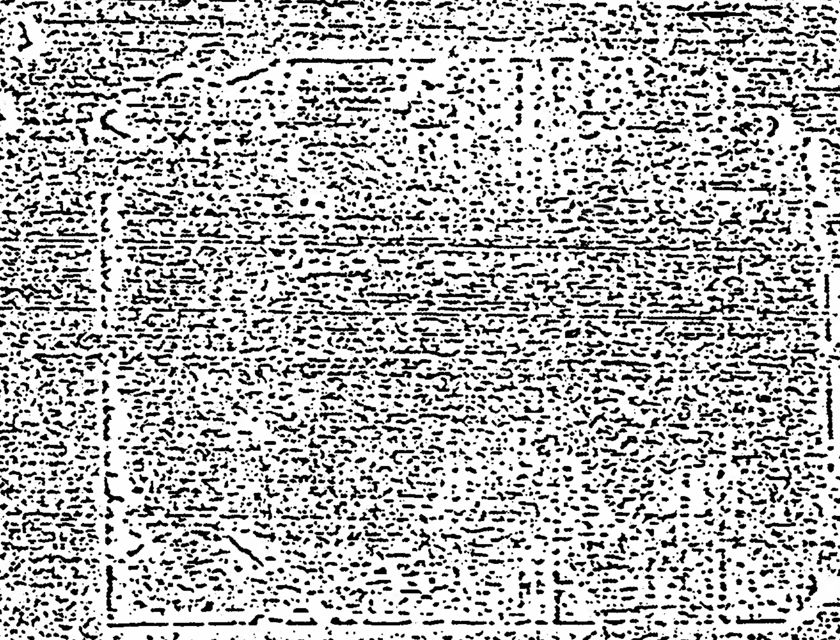


Figure 4.(U)Flowed Material [illegible]
[illegible] Magnification: 2.2X (U)

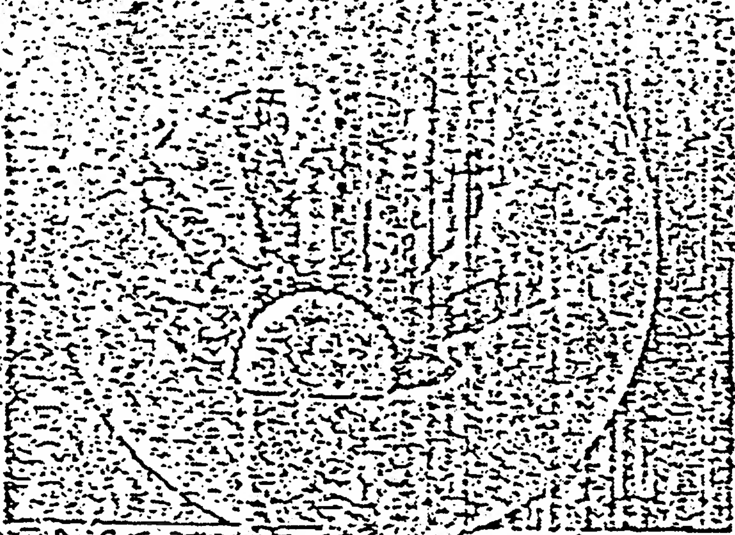


Figure 3(b) Cross Section (Transverse to the Length of the Specimen) Magnification 2X [illegible]



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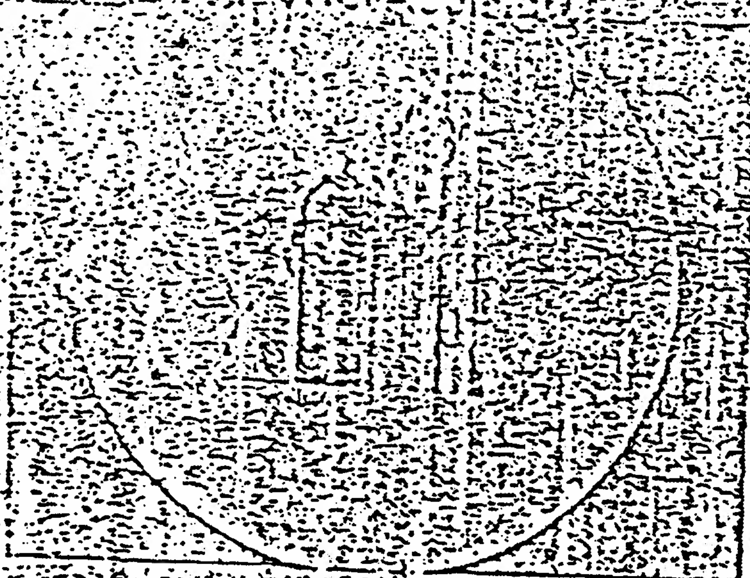


Figure 7.(U) Macrograph Cross-Section of Laminated Area
Magnification 7.75X (U)

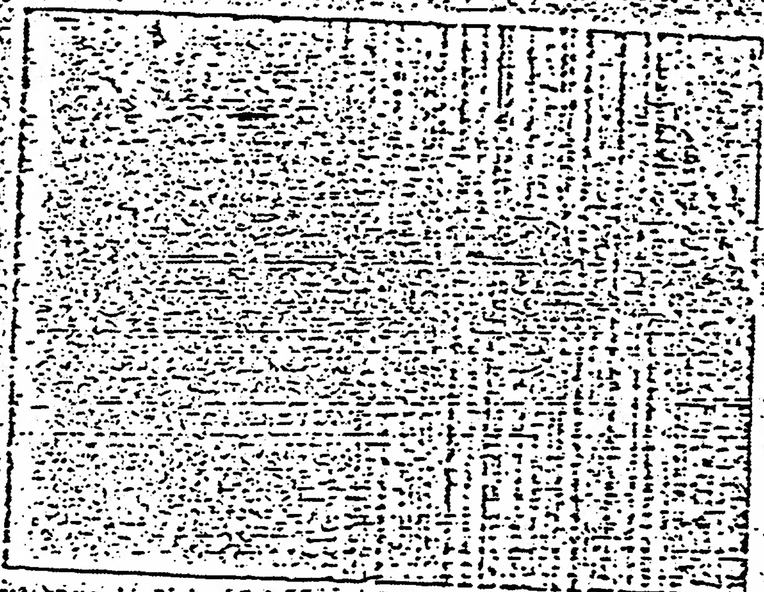


Figure 8.(U) Macrograph Cross-Section of Laminated Area
Magnification [illegible] (U)

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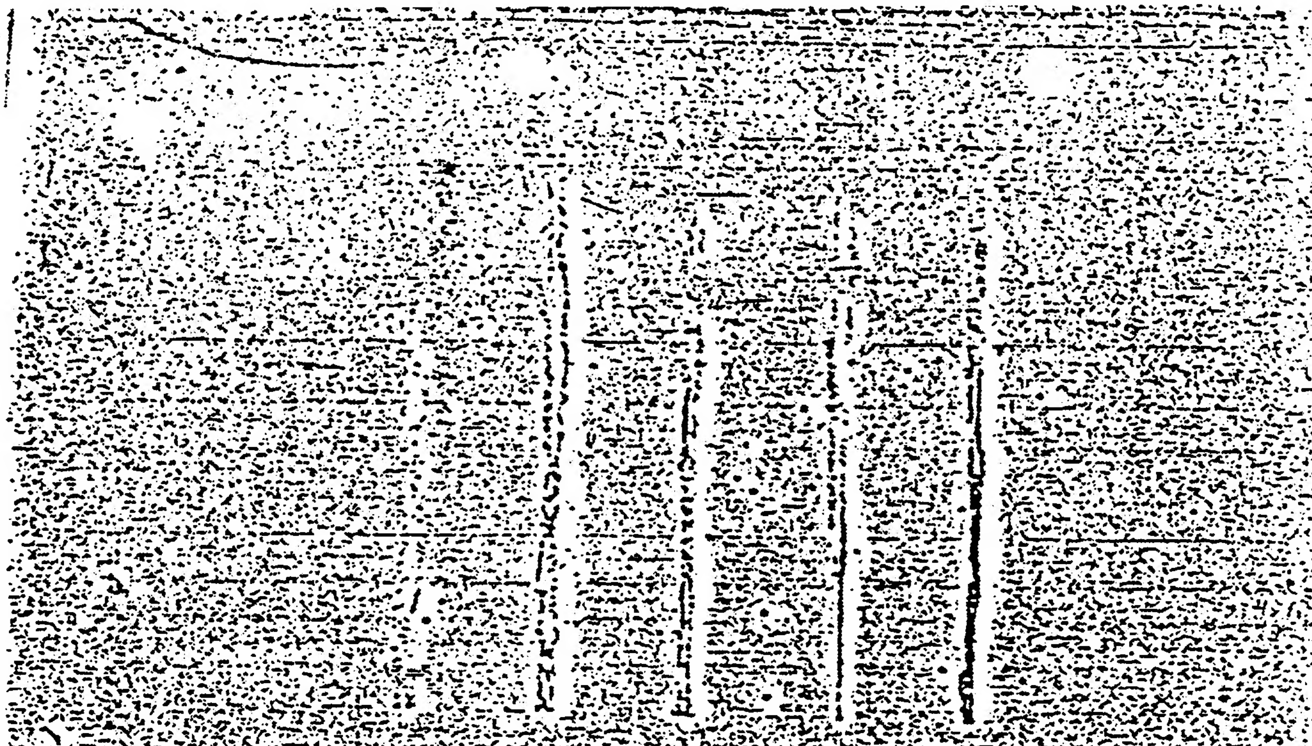


Figure 9 (a) Micro[illegible]
[illegible]
Magnification 63
(3% Nital Etched

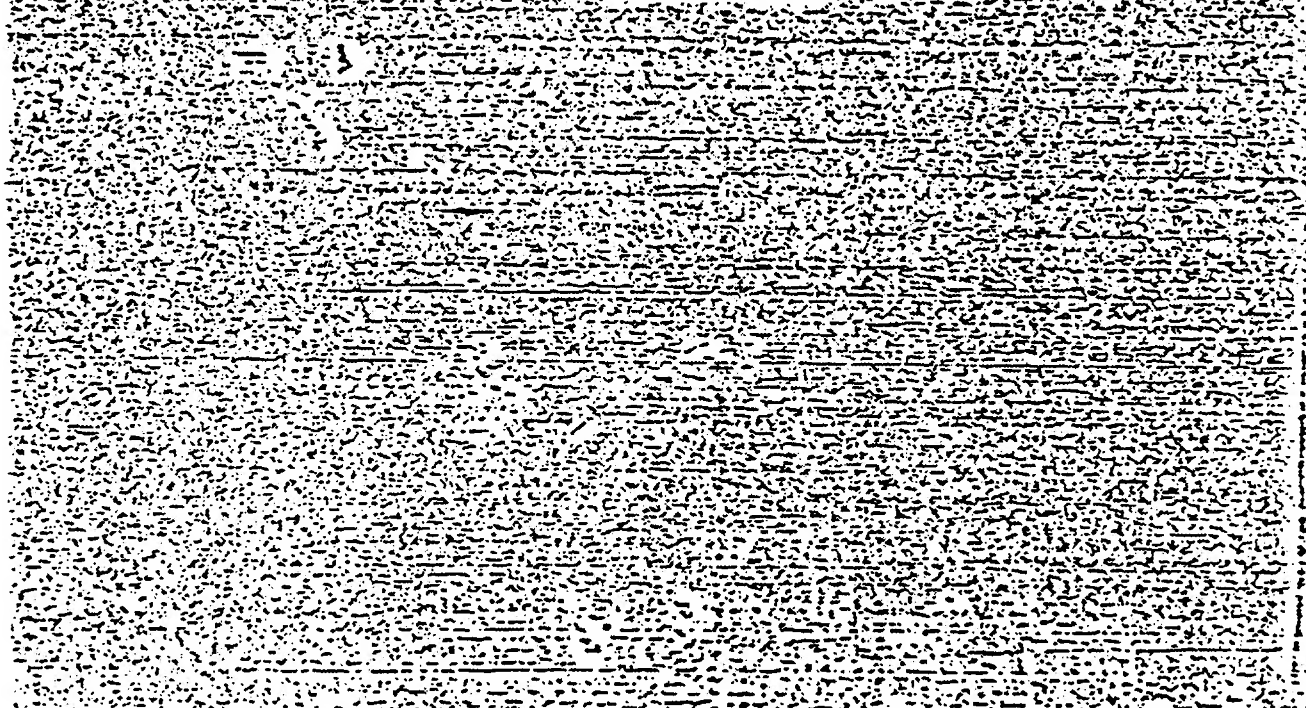


Figure 10 [illegible]

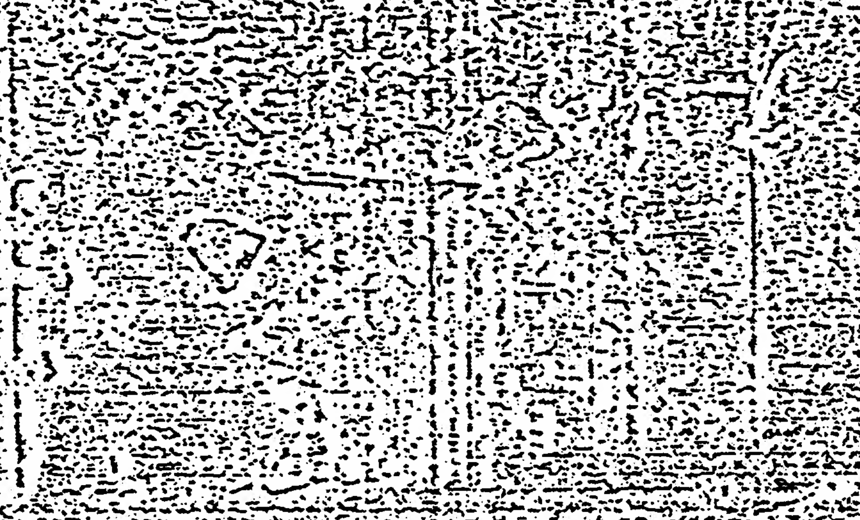


Figure 11. (U) Photomicrograph of Light Material Between the Laminations
Magnification 790X
(Mixed Acids Etchant)(U)